

**A METHOD FOR STORING AND FORWARDING VOICE AND FACSIMILE
MESSAGES USING AN E-MAIL PLATFORM**

FIELD AND BACKGROUND OF THE INVENTION

Today, PTT's offer voice boxes as a service. One of the major producers of such a system is Comverse Technology Inc. The voice box is illustrated with reference to the block diagram illustration of Fig. 1, shows a message storing system, generally designated 10. When a caller 12 dials the receiver's telephone number 18 and does not receive an answer, the PBX 14, linking the user with the PSTN, routes the call to the receiver's voice box 16, digitizes the message and stores it on a hard disk. Messages can be retrieved later by the receiver 18 contacting the dedicated voice box 16, generally stored at the PTT site.

The implementation of such systems is far from being trivial since PTT's, which deal with millions of customers need to provide a service in real time. For example, if one calls from city A to city B and does not receive an answer, he should immediately be connected to the hard disk which contains the allocated space of the receiver. Since the number of hard disks is huge (one per telephone line), this task requires special hardware and software that is not easy to make. Moreover, in order to leave a message for a person in a city B one has to call city B, in spite of the fact that if the line of the receiver in city B is busy, the PBX knows 20 that it is busy without calling city B. In addition, leaving a message for a person in City B costs exactly the same as calling city B.

Another form of Internet Telephony messaging available today is the sending of facsimiles (fax) to an email address. Such a service is provided by

Efax, of Palo Alto, California, which provides registered subscribers or members with a personal fax number, as described on their web site (<http://www.efax.com>). Each personal fax number is associated with an email address of the member. Fax messages which are sent to the personal fax number of the member are converted by "efax.com" into a format readable by email and then sent to the member in email format.

The fax to email service also requires the supplier to provide a large storage capacity for the messages being received as well as telephone lines for each personal fax number. Furthermore, the personal fax number is generally located in the code area of the supplier and thus persons sending messages who are outside the dialing area, will need to make a long distance or international call to send the fax.

At present, telephony messaging via PSTN or the Internet is one-way and is restricted to sending messages to a person who is signed-up or registered as a user with the service.

SUMMARY OF THE INVENTION

The present invention is based on the unified number concept, namely, that for each telephone number, there is an e-mail box with the same number. By means of a dedicated server, e-mail messages may be sent to e-mail boxes from a 5 telephone as well as from a computer. In addition, voice messages and text messages may be forwarded to a telephone.

A method for forwarding and storing a telephone call from a caller receiving a "no answer" or "busy" signal is provided. Furthermore, a method for 10 forwarding and storing a telephone call or facsimile message in email message format is also provided.

There is therefore provided, in accordance with a preferred embodiment of the present invention, a method for forwarding a telephone call, in which the caller receives a "no answer" or "busy" signal. The method includes the steps of:

- routing the incoming telephone call to a dedicated server;
- 15 identifying the number being dialed;
- associating an email address with the dialed number; and
- forwarding the voice message as an email message to the email address.

In addition,, there is provided, in accordance with a preferred embodiment 20 of the present invention, a method for forwarding a telephone call in email message format to a recipient. The method includes the steps of:

- the caller dialing a dedicated telephone number;
- identifying the telephone number of the caller;
- the caller entering the telephone number of the recipient of the telephone 25 call;

associating an email address with the telephone number of the recipient; and

forwarding the voice message as an email message to the email address.

Furthermore, in accordance with a preferred embodiment of the present
5 invention, the step of forwarding includes the steps of:

digitizing the voice message into a wave file; and

attaching the wave file to the email message.

Furthermore, in accordance with a preferred embodiment of the present
invention, the method further includes the steps of:

10 storing the voice message in a voice box; and

the recipient retrieving the voice message by telephone.

Additionally, there is provided, in accordance with a preferred embodiment
of the present invention, a method for forwarding a facsimile message in email
message format to a recipient, the method includes the steps of:

15 the caller dialing a dedicated facsimile number;

identifying the telephone number of the caller;

the caller entering the facsimile number of the recipient of the facsimile;

associating an email address with the facsimile number of the recipient;

and

20 forwarding the facsimile message in email message format to the email
address.

The method further includes the step of verifying whether the caller's
telephone number matches the registered telephone number of the caller. If the
identified telephone number does not match the registered telephone number of

the caller, the method further including the step of only forwarding the facsimile message if a correct password and the registered telephone number associated with the caller is verified.

Alternatively, only if the recipient telephone/facsimile number is listed as
5 being associated with a registered member is the voice/facsimile message forwarded.

Furthermore, in accordance with a preferred embodiment of the present invention, the step of forwarding includes the steps of converting the facsimile message into a TIF file and attaching said TIF file to the email message.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be understood and appreciated more fully from the following detailed description taken in conjunction with the appended drawings in which:

- 5 Fig. 1 is a block diagram illustration of a prior art voice box;
- Fig. 2 is a detailed schematic illustration of an unified messaging system, constructed and operative in accordance with a preferred embodiment of the present invention;
- 10 Fig. 3 is a block diagram illustration of the operation of the unified messaging system of Fig. 2 for forwarding and storing voice messages in email format;
- Fig. 4 is a schematic illustration of the personal details of a subscriber to the system of Fig. 2;
- 15 Fig. 5 is a schematic flow chart illustration of an embodiment of the operation of sending and forwarding messages utilizing the system of Fig. 2; and
- Fig. 6 is a schematic flow chart illustration of a further embodiment of the operation of sending and forwarding messages utilizing the system of Fig. 2.

DESCRIPTION OF THE PRESENT INVENTION

Reference is now made to Fig 2, which is a schematic illustration of the unified messaging system, generally designated 20, constructed and operative in accordance with a preferred embodiment of the present invention.

5 The unified messaging system 20 comprises a local telephone-email server 22, which is connected to a PSTN (or PBX) line 24. Voice messages are called in to a dedicated telephone number associated with the telephone-email server 22. The caller designates the addressee and the telephone-email server 22 prepares an email message with a wave attachment which is then forwarded, via
10 the Internet 52 to the email box 54 of the addressee.

The telephone-email server 22 is similar to the proxy server described in PCT Patent Application: PCT/IL99/00516 assigned to the Assignees of the present invention and incorporated herein by reference.

15 The telephone-email server 22 comprises a Computer Telephone Integration (CTI) card 26 connected to a wave API (Application Program Interface) 28 and a message storage device 30. The telephone-email server 22 further comprises components such as a voice proxy telephone server 32 and a transport provider 34 for receiving and forwarding voice/text messages.

A method of sending voice messages between remotely located
20 telephones and text messages as voice messages from a computer to remotely located telephones, utilizing e-mail properties, is also described in PCT Patent Application: PCT/IL99/00516.

Reference is now also made to Fig. 3, which is a block diagram illustration of the operation of the unified messaging system 20 for forwarding and storing voice messages in email boxes 54, utilizing the telephone-email server 22.

If the receiving line 18 does not answer for any of various reasons, the 5 caller 12 is not routed to the receiver's box, but instead is routed via the PBX 14 to a local telephone-email server 22 by a suitable telephone switching device. An example of a telephone switching device for routing incoming calls is described in Israel Patent Application No: 123086, assigned to the common Assignees of the present invention and incorporated herein by reference.

10 When the telephone-email server 22 receives a call routed from the PBX 14, it identifies the number (of the receiver) being dialed and by accessing the database records stored in the lookup table (LUT) of the message storage device 30, can identify the receiver's e-mail address. The voice message can be stored and/or digitized and attached to the e-mail message as a wave file, to be sent 15 through the Internet 52, to the e-mail box 54 of the receiver. The receiver can access his email box 54 through his personal computer 56, as required.

The message storage device 30 is configured to maintain details of members/subscribers of the service and a database type record (lookup table (LUT)) consisting of at least the e-mail addresses associated with named 20 addressees.

Reference is now made to Fig. 4, which is a schematic illustration of a record, generally referenced 56 for a member/subscriber. The members record includes the member's name 64, registered telephone number 66, email address 68, PIN (personal identification number) or password 70, or any other means of

restricting regular senders from using this service, and any other additional information 72. It will be appreciated that the membership record 56 is not restricted to the amount of information which may be added.

The exemplary lookup table (LUT), shown in Fig. 4 comprises a listing, 5 which is a personal address book for the member, and includes for each entry, the name of an addressee 58 and email address 60 associated with the addressee. For example, entry 1 has "joe smith" as the name of the addressee with the email address of "smithjoe@isp.com".

In order to receive a message, either the sender or the receiver needs to 10 be a subscriber to the service provided by the telephone-email server 22. A message can be sent to a receiver who is not a subscriber, provided that the sender is a subscriber. Similarly, message can be sent to a member by a person 15 receiver is not a subscriber. Thus, the system has the advantage over prior art systems in that phone/ fax messages can be sent or received by a subscriber and phone/ fax messages can be sent to an email address of a recipient who is not a subscriber, as will be described hereinbelow.

The operation of the service utilizing the telephone-email server 22 for sending and forwarding messages is now described with reference to the flow chart diagram of Fig. 5.

To send a voice message to the e-mail address of any recipient, the caller 20 (who is a subscriber to the service) contacts the service by dialing a dedicated service number (step 202). The service identifies the caller by the caller-ID (query box 204). If the caller is calling from a telephone unknown to the service, the

password (PIN) as well as the telephone number registered in the service is entered (step 206).

Once the caller is identified (step 204), the caller enters the telephone number of the person the caller wishes to send the message (step 208) and then 5 records his message (step 210).

As described in PCT Patent Application: PCT/IL99/00516, the telephone-email server 22 receives the telephone (or fax) message which is recorded (step 212). The incoming message is converted to a wave attachment (step 214) utilizing the wave device associated with TAPI (Telephone Application 10 Program Interface) phone line directly using the Wave API (Application Program Interface) 28. The message with wave attachment file is then sent via the Internet to the email address associated with the addressee (step 216).

Alternatively, once the caller is identified (step 204), the caller can access his personal address book (step 220) and then select the entry number of 15 addressee to whom the call should be sent (step 222). The telephone message is then recorded (step 210) and steps 212 –216 are performed to send the message to the email address of the addressee.

Optionally, the voice message can also be stored for a limited time period in a voice mailbox of a voicemail system, as described in PCT Patent Application: 20 PCT/IL99/00516.

Alternatively and optionally, the recipient of a message can send a reply without the necessity of becoming a member or subscriber to the service, as described hereinbelow with reference to the flow chart diagram of Fig. 6.

To send a message, the recipient (who is not a member) dials the contacts the service by dialing a dedicated service number (step 232). The service (which cannot identify the caller by the caller-ID) requests the caller (recipient) to enter the telephone number of the person the caller wishes to send the message (step 234).

- 5 If the telephone number is listed as being associated with a registered member, the message is then recorded (step 236).

As described above in steps 212-216, the incoming message is converted to a wave attachment and then sent via the Internet to the email address associated with the member (steps 238-242).

- 10 In a similar manner to that described with reference to Figs. 5 and 6, fax messages may be send to any email address and a fax received by the member of the service. The fax message is forwarded as a TIF file. For facsimile messages, a separate dedicated server having its own access telephone number is preferably used. In this case, the CTI card 26 is a card configured for converting facsimile messages to TIF format.

15 Thus, the telephone-email server 22 in addition to receiving a call routed from the PBX and storing voice messages can also send and retrieve voice and fax messages to email addresses. In other words, the telephone-email server 22 effectively acts as an unified message box for voice, e-mail and fax messages.

- 20 The unified messaging system 20 has an advantage over prior art systems in that the telephone-email server 22 can service many users per telephone line, since the unified messaging system 20 is not restricted by the number of members but rather by the number of users at any one time. For example, 5000 users are expected to send an average total of 120 messages per

day, utilizing a phone line for 2 minutes per message (that is 4 hours per day). Thus, in a 12 hour day, one line can service 15,000 members and 16 lines can service 240,000 members. In contrast, prior art voice boxes require a dedicated phone number for each member, that is 5000 lines for 5000 users.

5 It will be appreciated by persons knowledgeable in the art, that the unified messaging system of the present invention has advantages over the prior art systems, namely:

1. The receiver has the choice of obtaining his messages either through the telephone or through the computer.
- 10 2. The sender can send a message to a receiver, either from the telephone or from the computer.
3. An e-mail can be received (as a voice message) without having a computer.
- 15 4. An e-mail can be send through the telephone as a voice attachment e-mail, without having a computer.
5. The receiver can forward his voice messages through his e-mail to one or several addressees.
6. The receiver can filter and forward his voice mail to a telephone, his or any other, of his choice.

20 It will be further appreciated by persons skilled in the art that the present invention is not limited by what has been particularly shown and described herein above. Rather the scope of the invention is defined by the claims which follow: